Counseling in Cochlear Implant Patients: Going Beyond the Audiogram

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Disclosure Statement

• No personal or financial interests or affiliations to any information presented.
‘In Africa...some tribes have a remarkable way of greeting each other. When one person says hello, the response is “I see you.” Think how much better the world would be if we actually saw each other.’

-Bill Clinton, *How Each of Us Can Change the World*
To “See”: The CI Evaluation

• Case history—the patient’s story
  – The patient’s perception
  – Why are they sitting in front of you?
  – What prompted them to seek CI candidacy?

• Don’t analyze, just listen!
  – Luterman, 2006

• Sympathy versus Empathy
  – Sympathy: self-focused
  – Empathy: patient-focused
  – Person-centered approach

English K. 2008, 2010; Rodgers C. 1959
To “see” is to Empower

• **Empathy=Empowerment**

• Use the patient’s story to highlight their resources
  – Emotions may affect patient percept of abilities
  – Encourage self-efficacy and confidence

• “Never do more for a patient than they can do for themselves”
  – Motivational counseling versus realistic expectations

• …what about diagnostics?!
To “see”: The CI Evaluation

- **Diagnostics**
  - Evidence-based, best practices
  - Pure tone audiometry, speech testing, immittance measures, OAEs
  - Aided speech perception testing
    - AZ Bio, HINT Sentences, CNC words
  - ABR, VNG if needed
  - Psychological Evaluation if needed

- **Assessment of patient’s current quality of life, familial support, and personal motivation**

- **Case history + Diagnostics= Post-implant goal setting**

- **Help the patient establish individualized, realistic expectations**

ASHA 2012; FDA 2014; English K. 2008
Adult CI Candidacy Guidelines

• FDA
  – Individuals with a severe to profound hearing loss
  – <50% best aided speech perception thresholds implant ear
  – <60% in contralateral ear

• Insurance companies have specific candidacy guidelines; differs depending on insurer

• Covered by Medicaid, Medicare, the Veteran’s Administration and SOME commercial insurance companies

• CI Candidacy is determined through an extensive individualized evaluation process.

NIDCD 2011; ASHA 2012; FDA 2014
Informational Counseling

• Overview of surgery and the different cochlear implant manufacturers

• Differences between acoustic hearing and electrical stimulation of the VIIIth Nerve

• Post-implantation Rehabilitation Process
  – Ensure a post-op rehabilitation plan is in place
  – Numerous follow-up appointments; MAP optimization
  – Learning curve—not like putting on a pair of eye glasses!
CI Counseling

• Establish realistic, individualized goals and expectations
  – What are your patient’s listening and communication goals?

• Provide Candidate with Resources
  – Support groups
  – Contact with other CI Users
    • CI Company Website Forums
    • Other patients from facility/area
  – Encourage independent research!

*Candidacy evaluation and assessment may include further counseling or provision of resources depending on patient need and understanding during this process!*

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ASHA 2012; English 2010
CI’s in the US

• Well-established audiometric threshold and speech perception candidacy criteria
  – FDA, insurance companies, manufacturer criteria
• Implant technology has advanced quickly
  – Many accessories and wearing styles
• Appropriate counseling and follow-up appointments allow for optimization of patient’s MAPs
• Many resources available to patients
  – Local support groups, online support groups and forums

Why does so much variability exist across patients’ post-implant speech perception abilities?
Many Factors Influence Outcomes

- Pre- versus post-lingual deafness
- Pre-implant residual hearing
  - Lower thresholds, intact neural elements for stimulation (Van Dijk, 1999)
- Age at implantation
- Duration of Deafness
- Medical Contraindications
- Electrode placement
- Patient’s primary mode of communication
  - Lip reading abilities? Sign language?
- Patient motivation
- Support system

Many Factors Influence Outcomes

• Research suggests that duration of deafness influences patient’s speech perception outcomes post-implant

• Rubenstein et al. 1999: strong correlation between duration of deafness and post-implant monosyllabic word recognition

• Leung et al. 2005: as duration of deafness increased, monosyllabic word scores decreased
Factors Influencing Patient Outcomes

- **Green et al. 2007**: duration of deafness predicted 9% of variability in speech perception outcomes 9 months post initial stimulation

- **Blamey et al. 1996, 2013**: Found duration of deafness to be strongest predictor of post-implant speech perception abilities in original study
  - 1996: DoD 48% of variability in speech perception
  - 2013: DoD 19% of variability in speech perception

- **Conclusion**: factors from 1996 study are still relevant, but relative importance has changed
  - Authors found plasticity changes and degeneration of central auditory processing to be most significant variable
Implications of Studies

- Duration of deafness influences post-implant speech perception outcomes
- Other variables not measured in studies influence speech discrimination in addition to duration of deafness
  - Patient motivation?
  - Familial support?
  - Frequency of CI use?

*Patient speech perception outcomes are influenced by multiple factors!*
Patient A

• 49 year old male
• Age 6: Mild bilateral hearing loss as a result of child abuse
• Age 8: Received otologic treatment; worsened hearing substantially
• Age 11: Progression to profound bilateral loss
• Prefers manual communication
  – Also relies on visual cues, lip reading, writing, and Captel phone
• Aunt communicates on patient’s behalf if necessary
  – Also attended CI appointments with patient
• Currently uses amplification in the right ear only; no left amplification use since age 18
  – Poor hearing aid user
Patient A

- First gained interest in CI’s in 1980’s
  - Wanted technology to improve before choosing implantation
- Interested in getting a CI to:
  - Improve quality of life
  - Participate in more activities
  - Better monitor own voice
  - Better use telephone
  - Enjoy TV more
- Trouble communicating at work; modified responsibilities due to hearing loss
- Unable to enjoy life to the fullest due to hearing limitations
--Profound sensorineural hearing loss bilaterally

--HINT in quiet- 0% correct right ear, left ear, and binaurally

--CNC- 0% words correct, 0% phonemes correct right ear, left ear, and binaurally
Factors Influencing Outcomes

• Patient A qualifies for Candidacy
  – Profound sensorineural hearing loss bilaterally
  – Poor aided speech perception
  – Amplification use with little benefit

• Profound hearing loss for 38 years
• ASL primary mode of communication
• No use of amplification in left ear for 30 years
• Use of right amplification with little benefit
• Limited family support
• Counseled on realistic expectations
Patient A

- Implanted with a right-sided device and resumes left ear amplification
- Little to no auditory progress post-implant; device functions intermittently
  - Clinical Specialist present for multiple programming sessions due to patient complaints of sound quality
- Device failure confirmed, patient is explanted and re-implanted
- Patient reports first device worked better than second
  - Perception=reality
Patient A Outcomes

• 1 year post re-implant: No changes in speech perception abilities
  – Soundfield fresh noise thresholds borderline normal range, but no change in HINT scores pre-implant
  – Patient reports sound quality was better with original implant

• Changes made to CI programming:
  – Speech processing strategy
  – Pulse width
  – Rate of Stimulation
  – Maxima
Patient B

- 55 year old male
- Bilateral hearing loss following right cerebellar hemorrhage 2 years prior
  - NIH stroke scale: mild to moderate aphasia
- Constant tinnitus bilaterally
- Discontinued amplification use due to little benefit
- Relies on wife for communication

- Interested CI’s because:
  - Living in silence
  - Difficulty communicating with others
  - Minimal verbal communication; Wife speaks for him
  - Tinnitus
---Essentially profound sensorineural hearing loss bilaterally

---HINT in quiet - 0% correct right ear, left ear, and binaurally

---CNC - 0% words correct, 0% phonemes correct right ear, left ear, and binaurally
Factors Influencing Outcomes

- Right cerebellar hemorrhage
- Mild to moderate aphasia
- HINT in quiet and CNC scores both 0%
- Only able to communicate with wife
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<thead>
<tr>
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<th>Pre-Implant</th>
<th>1 year Post-Implant</th>
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<tbody>
<tr>
<td>HINT</td>
<td></td>
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<tr>
<td>Aided</td>
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<tr>
<td>HINT (quiet)</td>
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<td>Cochlear Implant</td>
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<td>85%</td>
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<td>AZ-BIO</td>
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Patient and wife report substantial increase in Quality of Life!
Conclusion: Empowerment

- Patient-focused goals
  - Case history + Diagnostic Findings

- Stress the importance of support, adherence to follow-up appointments, and taking ownership in the post-implant process

- Chee et al. 2004:
  - Survey of early deafened adults who received a cochlear implant following a long duration of deafness
  - Subjects who reported the greatest perceived benefit stated family and peer support, post-implant therapy, and a positive attitude contributed to their success

Rodgers 1959; ASHA 2012; Olson 2006
Realistic Expectations

• Take the time to counsel!
  – Patient-Centered, Empowerment Counseling AND Information Counseling

• Not all candidates will demonstrate speech perception abilities post-implant
  – Patient A versus Patient B
  – Help patients realize what they CAN do

• Build meaningful relationships with patients
  – Allows for more accuracy in assessment of patient’s goals, expectations, and overall perception of what a CI can do for them

• Be prepared to expect the unexpected!
  – Resources, Resources, Resources!


• *Psychological Review*, 84(2), 191-215. doi: 10.1037/0033-295X.84.2.191


References

References


